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CONTENTS

	Page
KUDZU—Power Plant of South's New Agriculture: By H. H. Bennett.....	171
GEORGIA BANKERS ACCLAIM TOPFLIGHT FARMERS	175
STATE ASSOCIATIONS FORMED	177
SPEEDING PRODUCTION OF NEW PLANTS FOR SOIL CONSERVATION: By Paul Tabor	178
FIVE FARMERS MAKE A PLAN: By P. A. Waring	179
WHERE SHALL WE GET THE SEED? By Grover F. Brown.....	183
SWEETCLOVER'S UNIQUE ROLE IN SOUTHWEST: By Kenneth Yoakum.....	187
THE DIARY OF AN AWAKENING FARM	189
ROOTS IN THE EARTH (Book Review by William Clayton Pryor).....	190
FOR REFERENCE: Compiled by Etta G. Rogers.....	191

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WELLINGTON BRINK
EDITOR



Harvesting kudzu with a combination mower and chopping machine on Cason Callaway's farm near Hamilton, Ga. Mr. Callaway's plans call for the dehydration of kudzu from more than 700 acres, sericea lespedeza from 450 acres, crimson clover from 250 acres, other legumes from more than 100 acres, in 1944.

KUDZU— *Power Plant of South's New Agriculture*

By H. H. BENNETT

Within the past ten years the agriculture of the South has taken a long forward step toward conservation, diversification, and other basic changes for general betterment. Scientific land use practices are being substituted for older methods that were allowing rapid and deadly wastage of productive land.

This new agriculture has not yet gone nearly far enough. It has made sufficient progress, however, to get into the understanding of the people—into their blood stream. Moreover, it is piling up results sufficiently convincing to assure that there will be no turning back, no wavering, no quitting.

The changes that have spread over the land are about as great as was the original change from forest to farming. Travelers by air discuss it as something on the order of a miracle. And that's about what it is.

These changes fit effectively into the Nation's vast wartime needs for increased products of the soil.

And they are resulting in greatly increased production of crops of all kinds. Hundreds of representative farmers from all over the South—little farmers and big farmers—have reported their increase in yields resulting from adoption of conservation farming. For example, 1,829 such farmers—I mean representative farmers, tenants and owners, little farmers and big farmers—have recently re-

ported results obtained on their own farms by working with soil conservation districts for 2 years or more. These results of conservation farming have been an increased production of the five major regional crops ranging from 14 to 110 percent; increased production per acre ranging from 19 to 42 percent; increased area of improved pasture, 215 percent; increased number of cattle, 82 percent. The increased production of corn amounted to 178,000 bushels more than on 15,000 fewer acres; and 1,719 more bales of cotton were produced on 9,435 fewer acres.

Recently there has been a shortage of grass and legume seed. This came about partly because of the tremendous expansion in the acreage of such crops as peanuts and soybeans, which tended to reduce the harvest of seed crops. At the same time there was an increase in dairying and meat animals and increased need for legumes as a source of nitrogen.

Recognizing increased local production of seed as fundamental to any considerable move for more grasses and legumes, the Soil Conservation Service has carried on an intensive campaign to get farmers to harvest seed. Many soil-conservation districts have launched seed-production drives, with outstanding success. The Holmes County, Miss., Soil Conservation District, for example, collected 1,623,020 pounds of seed of 15 grasses and legumes in 1942. Five years ago not one pound of seed of these same grasses and legumes was collected in that county.

EDITOR'S NOTE.—The author is Chief, Soil Conservation Service, Washington, D. C.



Along a Georgia roadside kudzu's magic effect is seen in these before and after photographs.



This same kind of thing is going on in Georgia and in the other Southern States. The districts are doing a valiant service in pushing the pasture and seed-collection phase of their conservation work.

Here's another example of some of the profound changes, all of which are giving increased production. At the beginning of 1943 there were in the Bogue Chitto-Pearl River Soil Conservation District in Louisiana, east of the Mississippi River, something over 200 new pastures which farmers had been able to establish through the joint activities of the Soil Conservation Service, the district, and other

local agencies. Plantings for 400 new pastures are now being completed, making a total of 14,000 acres of some of the finest pastures in the United States—mixtures of clovers and grasses that pretty nearly supply year-around grazing, a lot of milk and a lot of good beef.

Thus, milk and butter, beef and manna have arrived on the banks of Bogue Chitto and the Pearl. Cotton—well, I saw one field, that of Mr. J. M. Lambert, near Kentwood, La., changed over to pasture last year, and it had been producing a bale and a half of cotton per acre. I asked him if he wasn't



Harvesting a kudzu crop on the farm of Bona Allen, Gwinnett County, Ga. Three and a fourth tons of hay per acre came from this field



Corn makes an excellent yield on this kudzu-covered site on the farm of Baker Pinkston, Tallapoosa County, Ala.



Grazing kudzu is one of the profitable practices on the dairy farm of Asbury D. Wright, Hall County, Ga. This 3-year-old kudzu is growing on a portion of the farm which was worn out by row crops.

afraid it would get out that a farmer named Lambert, up in the Tangipahoa country, was plowing up a bale-and-a-half per-acre cotton field and planting it to grass and clover. He replied that he didn't mind at all—"tell 'em to come up and see what I'm doing."

I went back to Lambert's place this past spring, shortly after 18 cows were turned into this new pasture. They were producing 4 dollars' worth of milk more a day than before, which was enough to pay for the entire cost of the pasture development in 5 weeks.

And that's not all by any means. Other astonishing advances are changing the ways of southern agriculture. New crops of amazing capacity for good, and new methods for making soil more productive are spreading rapidly across the Southern landscape.

What, short of a miracle, can you call a plant that, with a little encouragement, takes in hand a piece of worn-out, abandoned land—so gullied you have to keep jumping to get across it—and in a little while converts it into excellent pasture for cattle, hogs, sheep, chickens, and work stock? That's what has forced us to revise our former appraisal of a lot of severely eroded land, as having been ruined for further agricultural use. Actually these gouged-out lands can't be plowed for row crops—but they are often excellent for pasture for the production of beef, milk, butter and pork, and for feed for work stock.

Moreover, the value of kudzu is not in any sense restricted just to severely eroded lands, critical slopes, and gullies. It is a splendid crop for good land, too. Not only can it be cut for hay on the smoother lands, but it protects these lands—all lands on which it is established—from erosion. It stores organic matter and nitrogen in the soil. It shades the land, keeping it cool and mellow and absorptive. It will run through and cover a cornfield this year; next spring or early summer it can be plowed, and the land planted to corn; then after the last cultivation of the corn it will again spread over the field, stop the erosion, store some more nitrogen and at the first hard frost lay down a carpet of rich leaf-litter at least the equal of a good ground cover of forest-litter. All this in one year. Many abused cornfields that were producing around 7 bushels of corn per acre have been improved and protected to the point where they are producing up to 40 bushels or more every year.

Kudzu within the last few years has spread from the status of an ornamental or grazing crop on a few widely scattered farms, to a 400,000-acre, high-grade hay and grazing crop. Estimating beef production at only 150 pounds per acre, this much kudzu would

turn out, if used for beef cattle, 60 million pounds of beef annually. Looking ahead, I see the likelihood of 8 million acres in kudzu before very long.

There used to be a time, in the South, when people speculated on what marvels could be achieved if only the region had an alfalfa suited to the climate and soils—how such a crop would set the step for taking up livestock and dairying, the key to diversification and sound agriculture. Nowadays, the situation is somewhat reversed. I am being asked all through our Northern States if it is likely that a variety of kudzu will be found that will grow in the North! Many northern farmers are beginning to envy the South its advantage in having this new plant marvel, kudzu, to range alongside such other newcomers to fame as the lespedezas, crotalaria, wild winter pea, blue lupine, Dallis grass, and all the rest. And alfalfa is growing successfully, too, in many parts of the South.

All of these things are in the nature of permanent improvements to Southern agriculture. They are not likely to be cast off, or forgotten—ever.

Recently, in Atlanta, I participated in a meeting of the Kudzu Club of Georgia, a unique organization mentioned briefly in the November 1943 issue of *Soil Conservation*. This proved to be one of the most significant and far-reaching agricultural meetings in recent years. More than 300 persons were in attendance—county agents, experiment station directors, vocational agriculture teachers, extension directors, supervisors from 22 soil conservation districts, bankers, railroad representatives, judges, doctors, editors, legislators, master farmers, a utility company president, college officials, State and Federal workers. One interest they all had in common—kudzu, and the opportunity that kudzu offers the South.

The conference evolved into an "experience meeting." We were told by one of the group of a study he had made on the effect of kudzu on temperature; in the shade of this legume the ground stays cooler than it does in the shade of other vegetation tested.

Cason Callaway told of results he is getting from growing kudzu and selling it for hay. Later I visited the Callaway plantation on Pine Mountain, near Hamilton, Ga., to see for myself the splendid start that has been made toward utilizing all the land of an entire watershed in accordance with its adaptability and need. Here the impoverished cultivated lands are being built back to high productivity, and progress is being made to control floods and stop silting. Here, on the Callaway farm, is the most modern plant I know of anywhere for dehydrating kudzu, sericea, alfalfa, and other hay crops. Mr.

Callaway has a large acreage in kudzu, which he converts into meal. An analysis of this meal—dehydrated leaves, stems, and vines—shows a protein content of 19 percent, and a carotene content of 285 micrograms per gram.

Dr. H. P. Stuckey, director of the Georgia agricultural experiment station, had some interesting analyses to offer the conferees. Laboratory tests at his station showed kudzu leaf meal with protein contents ranging from 17 to 30 percent and with a carotene content running up to better than 400 micrograms per gram. That's powerfully good in the way of substance for the flesh—any kind of flesh.

Somebody suggested that the stuff—ground kudzu—might be suitable for human consumption. "Take out some of the fiber and maybe you'll have something on the order of a steak."

My friend Bill Pryor didn't take the remark as a joke. He borrowed some of my supply and showed up the next day with a batch of kudzu soup. Said he had strained out the more fibrous material, added a little milk, a pinch of thyme, and a dash of onions. A number of people said they "rather liked it." It had quite an "alfalfary" twang, everybody admitted, but maybe you could get used to that.

In my own talk at Atlanta, I asked this cross-sectional gathering to make a pledge to work for 8 million acres of kudzu in the South by 1950. To help guarantee such an attainment, I suggested that a kudzu society similar to Georgia's be established in each

Southern State right away. Unanimous approval met this twin proposal.

Let's watch this movement grow!



Chopped kudzu is fed through this stationary chopper to be cut finer before entering the dehydration oven where it is dried at 1,400° Fahrenheit under steam pressure. Cason Callaway discusses the process with James A. Garrard, at left. Garrard is district conservationist, Pine Mountain Soil Conservation District.

GEORGIA BANKERS ACCLAIM TOPFLIGHT FARMERS

The Georgia Bankers' Association, convinced that conservation farming is a sound community investment, set the pace at a meeting in Rome, Ga., on November 4, for a series of 20 programs the association plans to sponsor in the 20 soil conservation districts in the State. These programs will accord recognition to farmers who have made outstanding progress in carrying out complete conservation.

The 18 banks, and the district cooperators, in the 8 counties of the Coosa River soil conservation district joined in making the meeting a success. Said George L. Rice, president of the Georgia Bankers' Association: "Nothing the association has attempted in the interest of Georgia agriculture will pay a bigger dividend than the soil conservation movement, with every bank in Georgia squarely behind it."

The idea wasn't original in Georgia. It was lifted almost intact from a plan developed in Oklahoma, even to the wording of the certificates presented to farmers. But once the idea was adopted, the Georgia bankers began to put it across in their own inimitable fashion.

The Coosa River District up in the northwest corner of the state looked like an ideal place to begin. Walter S.

Cochran, vice president of the National City Bank, had suggested to the state association the idea of putting on a program like the one in Oklahoma. Claude Booker, vice president of the First National Bank, of Rome, was chairman of the agricultural committee.

Both Rome banks have always been interested in encouraging progressive farming. Some 20 years ago the National City adopted a policy of not lending money to any farmer who didn't "live at home," and this revolutionary policy made a big hit with J. Phil Campbell, who was then Director of Extension for Georgia. As a result, Mr. Campbell developed a close association with Mr. Cochran and John M. Graham, the bank's president, and Mr. Campbell readily accepted an invitation to be one of the speakers on the program for the Rome meeting.

Mr. Graham and T. A. Lamar, president of the First National Bank proffered conference rooms and other facilities for working out preliminary arrangements. Mr. Booker, as chairman of the agricultural committee of the bankers' association, had the job of making arrangements for the meeting and every detail was carefully planned.

The Rome News-Tribune played up the event with news and feature stories almost daily for more than a week in advance. The Atlanta papers, which virtually blanket the State, ran several news stories, and The Atlanta Constitution carried an excellent editorial on the meeting, with special reference to the work in soil conservation districts. The Association Press picked up several items, and the small dailies and weeklies in the eight counties in the district carried stories with local angles about award winners. Mr. Booker and Mr. Cothran presented a radio interview about the meeting over Station WRGA, at Rome.

Shorter College, Rome, gave the program enthusiastic support. Miss Louise Bennett, dean of women, presented a humorous talk at the banquet. Three pretty voice students sang in the "mountain music" manner.

Approximately 150 bankers, farmers, and other guests attended the banquet which followed the afternoon session. Guests included the 67 award winners and the members of the board of supervisors for the district, composed of Smiley S. Johnson, chairman; Robert Campbell, secretary; J. G. Brandon, and R. P. Brison.

Walter Cothran, toastmaster, kept the program moving rapidly. Only once did he inject a serious note. That was to express pity for those farmers who, in spite of the opportunity that had been afforded them to improve their farming methods, had chosen not to cooperate with the district and were going on raising cotton and corn year after year without conservation practices while their fertile top-soil washed away and their crop yields diminished. Haynes McFadden, of Atlanta, secretary of the association and known far and wide as an after-dinner speaker, followed Miss Bennett on the program, matching her anecdotes about "Brother Pete's" farm with a few rare ones of his own in the same vein, and the meeting concluded in high good humor.

The preliminary job of selecting the 67 farmers who received the certificates of award from among 1,500 farmers cooperating in the district program was simplified by adopting a score card with various point values for 12 different soil conservation practices included in the district farm plans. To qualify for the awards it was necessary for a district cooperator to have earned at least 90 percent of the points it was possible to earn under his district farm plan and to have established at least a portion of each planned practice. This eliminated a number of farmers who were doing excellent work on most of the program planned for their farms, but had failed to carry out one or two of the planned practices. On the other hand, it clearly emphasized the importance of a complete soil conservation program.

The various soil conservation practices designated by the agricultural committee of the bankers' association and the per-acre point value assigned to each were: Approved rotations established, 10; kudzu planted, 15; sericea lespedeza planted, 15; terracing, 10; water disposal areas established, 10; drainage, 5; woody plantings 5; woodland im-

provement, 2; wildlife areas established, 3; farm fish ponds constructed, 5 points per pond. Not all farm plans included all these practices, but this did not affect their rating, since scores were based on practices planned for each farm.

The farms were scored by work unit conservationists of the Soil Conservation Service in each county on the basis of the extent to which planned practices had been established on their farms. Nominations were made by C. L. Veatch, district conservationist, to the board of district supervisors, who certified the names to the agricultural committee of the bankers' association. The list of 67 award winners was announced in advance of the meeting and a local committee of bankers in each county invited the award winners to the meeting at Rome for presentation of certificates, and arranged for transportation.

For the benefit of those who had to come relatively long distances from surrounding counties, the afternoon session was scheduled for 4:30 to 6:30 p. m., to be followed by the banquet at 7. The meeting got under way promptly with a call to order by Chairman Booker. Following the invocation by W. F. Byrd, president of the First National Bank of Dallas, Ga., Mr. Booker said that the Georgia Bankers' Association, in line with its policy of supporting the work of existing agencies, had recognized the value of the work the districts were doing through development of complete soil conservation plans for farms in the state, with assistance of the Soil Conservation Service. He expressed the hope that farmers throughout the state would take advantage of the service that was available to them in their local districts.

Mr. Booker read a letter he had received from Congressman Malcolm C. Tarver of the Seventh Congressional District of Georgia, expressing regret that he would not be able to attend the meeting, because of official duties in Washington, but assuring the group of his best wishes for success of the meeting and commenting very favorably on the excellent work being done in the district, with which he said he was thoroughly familiar.

J. Phil Campbell, assistant chief of the Soil Conservation Service, guest speaker on the program, offered the suggestion that soil conservation districts, with their facilities for evaluating farm land on the basis of capabilities rather than that of fluctuating land prices were in a position to do some sound local post-war planning for rehabilitation of returning soldiers. He suggested that district supervisors, in cooperation with local bankers, Soil Conservation Service technicians, county agents, and representatives of other agencies and groups could form committees now that would be able to help on this and other local problems after the war.

J. G. Brandon, member of the board of supervisors, discussed the district program, speaking on the subject, "The Coosa River Soil Conservation District, Its Organization, Aims, and Objectives." Awards were presented by Mr. Rice, president of the Georgia Bankers' Association, who gave a brief résumé of the accomplishments on each farm as he read the names of award winners. A framed certificate of



Farmers who received awards at meeting in Rome, Ga. Officials of Georgia Bankers' Association in front row are, l. to r.: D. J. Arnold, vice president; George L. Rice, president; Freeman Strickland, treasurer; Haynes McFadden, secretary.

award was presented to each award winner as his name was read, by one of a group of four pretty girls who served as pages. The 67 award winners were seated in three rows across the front of the court room.

In responding for the award winners at the conclusion of the presentation ceremony, Posey A. Dooley, president of the Floyd County Soil Conservation and Improvement Association, related how a soil conservation program which he began back in the days of the old Rome erosion control demonstration areas and continued in cooperation with the Coosa River district, had completely transformed his farm. He is not only making a profit from many crops not grown before, but

is conserving his soil and getting considerably increased yields from cotton and corn, which formerly were about the only crops grown on his farm. He estimates that the gross income of his farm has increased by more than \$5,000 a year since he began conservation farming, as a result of production of new crops, including hay, small grain, and other feed crops, and increased yields of cotton and corn. Last year Mr. Dooley sold \$1,000 worth of sericea lespedeza seed from 15 acres of severely eroded and formerly idle land. This year he cut 7 tons of sericea hay from a part of the area and was harvesting the sericea for seed again at the time the meeting was held.

STATE ASSOCIATIONS FORMED

Soil conservation district supervisors in 4 of the 9 States of the Southeastern Region have formed permanent State associations to aid in the exchange of information on administration and operation of the local districts and to take part in other non-political activities involving the welfare of the districts.

The Georgia Association of Soil Conservation District Supervisors, organized at the conclusion of a two-day meeting in Atlanta, November 18-19, is the latest association to be formed. The meeting was called by the State Soil Conservation Committee of which Walter S. Brown, Georgia's Director of Extension, is chairman.

Speakers included H. H. Bennett, chief of the Soil Conservation Service; J. L. Boatman, chief of the division of subject matter, Extension Service, Washington, D. C.; Dr. George King, director of the Coastal Plain Experiment Station, Tifton, Ga., H. P. Stuckey, director of the Georgia Experiment Station, Griffin, Ga.; B. H. Hendrickson, superintendent of the Southern Piedmont Experiment Station, Watkinsville, Ga.; J. Phil Campbell, assistant chief of the Soil Conservation Service, and others.

Added feature was a banquet arranged by Channing Cope, of Atlanta, organizer of the Kudzu Club of Georgia, which was attended by the supervisors and members of the Kudzu Club from throughout the State. (See Dr. Bennett's article elsewhere in this issue.) Chief Bennett was among the speakers on this occasion and also took part in a radio interview with Mr. Cope over Station WAGA. He spoke the following morning before the supervisors' meeting.

W. N. Holsenbeck, school teacher and farmer of Winder, Ga., was elected president of the Georgia association. Mr. Holsenbeck is chairman of the Oconee River Soil Conservation District. J. M. Gillis, Jr., of Soperton, Ga., Ohoopee River Soil Conservation District, was elected vice president. J. C. Wise, Jr., of Sumter, Lower Chattahoochee Soil Conservation District, and R. H. Gregory, of Chattooga, chairman of the Limestone Valley Soil Conservation District, will serve with the president and vice president on the executive committee. Dean S. Lott, of Hoschton, Ga., Oconee River Soil Conservation District, was appointed secretary-treasurer.

Similar organizations have been formed in North Carolina, South Carolina, and Alabama. Officers of the other state associations are:

North Carolina Association of Soil Conservation District Supervisors—O. J. Holler, of Union Mills, chairman of the Broad River Soil Conservation District, president; D. S. Rhyne, of Gastonia, chairman of the Lower Catawba Soil Conservation District, vice president; W. W. Eagles, of Maccllesfield, chairman of the Coastal Plain Soil Conservation District, secretary. These officers with Wade H. Paschal, of

Siler City, Haw River district, and M. V. Lawrence, of Durham, Neuse River Soil Conservation District, make up the executive committee.

South Carolina Association of Soil Conservation District Supervisors—E. C. McArthur, of Gaffney, Broad River Soil Conservation District, president; T. T. Traywick, of Cope, Edisto Soil Conservation District, vice president; Clifford T. Smith, of Kinnard, Lower Saluda Soil Conservation District, secretary-treasurer. These officers, with J. B. Douthit, of Pendleton, chairman of the board of supervisors for the Upper Savannah District, compose the executive committee.

Alabama Association of Soil Conservation District Supervisors—R. T. Jones, of Selma, Central Alabama Soil Conservation District, president; W. R. Cunningham, of Killen, Route 1, Northwest Alabama Soil Conservation District, vice-president; D. H. James, of Enterprise, chairman, Wiregrass Soil Conservation District, secretary-treasurer. These officers with E. B. Stowers, of Evergreen, Conecuh River Soil Conservation District, and P. G. Compton, of Gallion, chairman, Black Belt Soil Conservation District, compose the executive committee.

SPEEDING PRODUCTION OF NEW PLANTS FOR SOIL CONSERVATION

By PAUL TABOR

Seventy-three tons of seed of promising new crops for soil conservation have been produced and distributed in soil conservation districts by the Soil Conservation Service nurseries in the Southeast. Most of the seed was of various species of lespedeza. Grasses have been added recently and vetches and clovers also are now being grown by the nurseries for distribution to districts.

Although the Southeast is a natural forest region and native trees are satisfactory for reforestation, its native grasses and legumes are not well adapted for combined intensive use as grazing or hay and full cover for soil conservation. More vigorous growing species are needed for use on different sites. Various introduced grasses and legumes as Bermuda, Johnson, Kentucky blue, orchard, tall oat, Dallis grass and carpet grasses; white, red, Persian, and crimson clovers; common, Korean, Kobe and sericea lespedeza; Florida beggarweed; and Kudzu, have largely displaced the native grasses and legumes for intensive soil conserving practices. Other plants recently introduced either by planned efforts or by accident may be more valuable for soil conservation on some sites than ones now available. The Soil Conservation Service nurseries search for superior

EDITOR'S NOTE.—The author is assistant chief, regional nursery division, Soil Conservation Service, Spartanburg, S. C.

(Continued on page 186)



A new, promising pasture plant for certain sections of the Southeast because of its ability to grow on dry sites and because of its drought resistance is narrow leaf Bahia grass. This seed block of Bahia grass is in the Soil Conservation Service nursery at Rock Hill, S. C.

FIVE FARMERS MAKE A PLAN

Five farm families live in Honey Hollow. We own and work our places singly and separately, but during the last 4 years we have discovered an important fact about the stream which winds across our land. We have learned that it binds us together, and gives us a common problem. And as we have come to understand this fact a new approach to our farming has developed.

Honey Hollow Creek starts up on the hill on Frank's land, crosses and drains Forrest's farm and Stewart's farm and then flows through the valley where Charlie and I live. All in all, our watershed has in it about 840 acres of farm land and woods which have been in use for about 200 years or more. We are poultrymen and dairymen and general farmers, and one of us recently has begun to raise steers. In general, in our neighborhood, most farmers practice the same kind of agriculture, and though only one of us actually inherited his farm we have all been living here for a good many years.

The country in our neighborhood is rolling, but none of the land on our farms can be said to be steep. However, for a long while we have known that there were gullies here and there, and thin spots where crops grew badly. I suppose if the creek had not eventually filled up and flooded all the bottom land, we would have gone on for a good many years in ignorance of the problem that we now know is pretty serious. But the creek came to give us a real headache, and we were forced to learn our lesson.

The upshot of this situation was that we went in for erosion control. We went in for stopping the obvious silting in of our stream, and the now obvious fact that this silt was the soil fertility upon which we were trying to build our homes and our farms. We went in for, at least, thinking about the problem and planning the work together. The stream had taught us that. The stream had shown us that we did not own five separate parcels of land, but that in a sense these five farms belonged together, as far as understanding the problem of erosion was concerned, and the job of planning for its control must be a single job. Frank had said one day when we met to talk over what we would do: "You fellows down there in the valley can't solve the problem by yourselves. Your trouble really starts up on my farm where the creek rises. We will have to solve it together."

EDITOR'S NOTE.—The author is a farmer in Bucks County, Pa. In collaboration with W. M. Teller, Mr. Waring is co-author of the new book *Roots in the Earth: the small farmer looks ahead*, a review of which is to be found in this issue.

By P. A. WARING

And Frank was right. After 4 years of planning and working together on this problem we know that as far as the control of erosion is concerned we have to think in terms of our watershed, and not in terms of five separate farms whose boundaries really bear no relation to the shape of the land. If you should come to Honey Hollow today you would see that we have made a beginning. You would see that all our crop land is now plowed and planted on the contour, and that we are following a general plan laid out for the whole 840 acres. Of course we each do our own work, except now and again when we lend a hand to one another on some special job. But we have planned the way to handle our land together. And there have been good results. Gullyling has been greatly reduced, our stream no longer goes quickly into flood, endangering crop land, and already we are beginning to see increases in the yield per acre of our crops.

This experience has in turn taught us something else. We are beginning to see that perhaps there is a bigger job than erosion control which we can think about and plan together—a job of which erosion control is but a very important part. We are beginning to see that it is possible to build a permanent agriculture here on our places, and that perhaps this means doing a whole lot of things besides those which we are now doing. Perhaps it means more than better pastures, better rotations, better relations of our livestock to our cropping, contour strip planting and terracing; perhaps it means the development of wildlife conservation for our whole area.

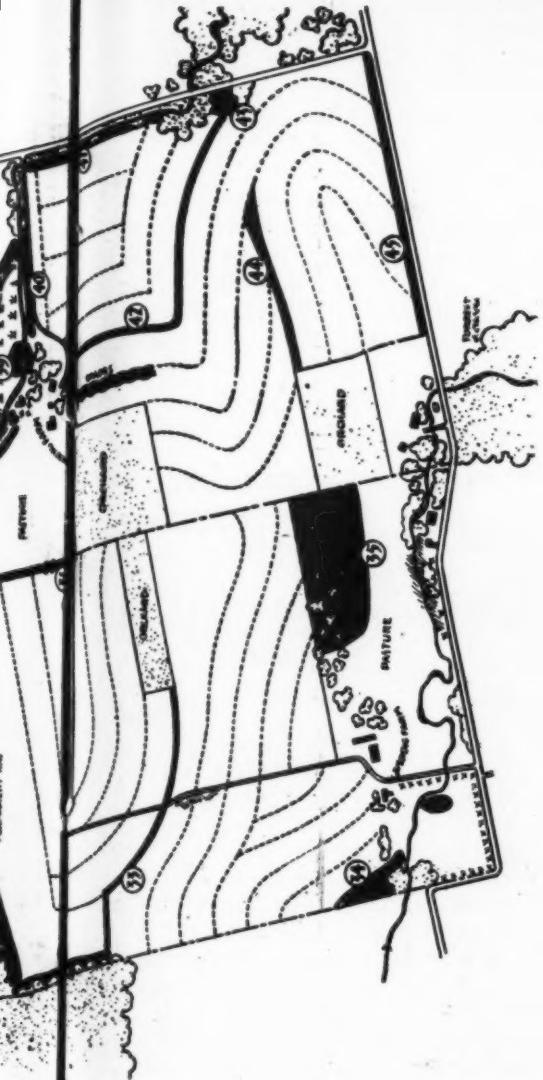
Most farmers sooner or later learn the value of birds in the production of crops. Few of us do anything about it, for we are usually so busy with the immediate job of earning a living that we never get to doing what we know would be wise and good. Moreover, it is sometimes difficult to figure out what one family can do on one small farm.

Over the years the cropland on our five places has been widened, the woods areas further separated, the hedge rows cleaned up. All of this has tended to reduce the cover for wildlife. We and our forebears have done this to get more land for crops and thus earn more money. Most farms hereabouts have gone through this process. Bird life has suffered, and if the fact were faced by most of us, our pocketbooks also. But the fact usually has not been faced, and we farmers in Honey Hollow are no exception. We have

HONEY HOLLOW LAND USE and WILDLIFE PROJECT



Drawn by Forrest Crooks, whose farm is located on
this map just above "17."



- 1, 5, 31, 44 Hedge planting.
- 2 Windbreak.
- 3, 27 Hedgegrow interplanting.
- 4, 9, 10, 11, 25, 40, 45 Road bank planting.
- 6 Hedge planting on terrace outlet berm.
- 7, 15, 23, 34, 43 Odd corner planting.
- 21, 32, 38 Field border planting.
- 8, 13, 20, 28, 30 Field border seeding.
- 12, 16, 19, 24, 33, 42 Field border selective cutting.
- 14 Contour hedge.
- 17, 41 Interplanting.
- 18, 29, 39 Streamside planting.
- 22 Farm pond.
- 26, 35, 36, 37 Woodland fencing.
- Woodland planting.

felt that we simply did not have the time to plant hedgerows and to redevelop cover, along with the pressing business of caring for stock and planting and harvesting grain. Not until recently did we stop to consider whether we could afford to neglect this side of farming if we were to develop a really permanent agriculture.

Now, in the business of planning for erosion control we had drawn a map of our five farms and of the stream which drains them, the woods areas which dot them here and there, and the existing hedge rows. Our map showed us what we had and what we did not have. It was easy to see that the wooded areas were not connected, that there was no continuous cover for birds, that crop land on the whole was in wide open spaces uncut by hedgerows.

It is sometimes easier to see the whole of a situation by looking at a map than when walking about your farm. And it certainly helps in grappling with a problem like this one, which covered five farms and not one. At any rate the map visualized the matter. And as is often the case, the difficulties did not seem so great when we began to think about them together as when we had tried to think them through separately and alone. Moreover, we had learned the value of cooperation from our erosion control work and were more ready to tackle what proved to be an expansion and development of the watershed conservation plan.

The result of all this business, which went on for about a year, is that we have made a plan. Without a plan, we know that we should get nowhere. With it, we have a goal to strive for. Our plan sets no limits on finishing our project, for we knew we would have to work within our capacities of time and strength and money. But we agreed to do our best, each on his own place.

We asked the Soil Conservation Service to advise us. We set as our aim in planning a wildlife project the association of this with all the other things we might do to build a permanent agriculture for Honey Hollow. Conserving had meaning only when undertaken by us as farmers and as part of our agriculture. It is, after all, not something separate and distinct in itself, but an integral aspect of a plan for proper land use.

The framework of our plan, as shown on the map, lies in developing continuous cover for wildlife throughout the whole watershed, where farm woodlot is connected with farm woodlot by field border hedges, and by contour hedges of berry-bearing and nut shrubs, and nut and fruit trees, and conifers for winter protection. These hedges, along with islands of shrubs grown in the nooks and corners of our places least desirable for crops, will provide travel-

ways, food, shelter, and nesting sites for birds and some small animals, and will serve to break up the large sections of crop land.

Our idea is not to develop a project from the standpoint of game management, but to conserve wildlife for the sake of better land use, the sake of our crops. We have begun to realize that we farmers have unbalanced nature by our neat clearing of land, and that the old ecology is gone in most agricultural areas. We have come to realize this with sorrow as cut worms, beetles of many kinds, and many pests which attack the farmer have increased. Whether a return to normal of the bird population will solve our difficulties we are certainly not now prepared to say. But it seems logical, and the work of such agencies as the Audubon Society and of the Department of Agriculture would certainly point to the fact that it is desirable from every standpoint to try to bring about a return of the balance in nature.

Subdivisions of our Honey Hollow project are as follows:

1. Planting of hedges and shrub islands.
2. Planting of woodland edges.
3. Planting of windbreaks, roadsides.
4. Stream development for better wildlife and farm use.
5. Increasing of field edges by breaking up large fields into contour strips of crops.

It is clear to us as we look at our plan that there is much to do in planting this cover and in developing our stream. But we know that we do not have to finish it in one year or two. Moreover, some of it we have already accomplished by converting square fields into contour stripped fields and thus increasing the field edges which will tend to bring small birds out into the open areas more than heretofore. And some gains in work will lie in allowing hedges to grow up and thicken rather than keeping them clean.

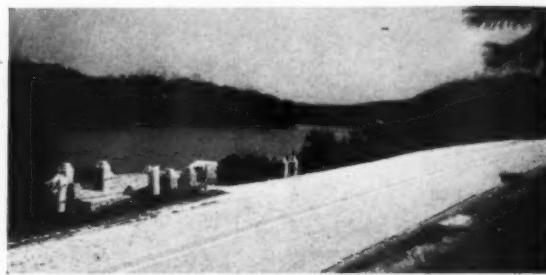
Nevertheless, there will be a good many shrubs and small trees to plant and this will take time and labor which will have to be spread over some years. The Soil Conservation Service has agreed to help us by supplying some free or low-cost nursery stock because it is interested in the cooperative aspects of our project.

This is our plan. We have already made a beginning with it. Last spring we each planted a hedge row, some by thickening an old and established row, some by beginning a new one on the contour, and all by following the plan upon the map. We can mark off a little area of accomplishment, and we have learned something about our capacity to do this work, even in the busy spring season. We are following the advice of the Soil Conservation Serv-

ice in the selection of planting stock. We are also seeking knowledge from such fine books as William R. Van Dersal's *Native Woody Plants of the U. S., Their Erosion Control and Wildlife Values*, and the National Audubon Society Circular by Peterson called *Trees, Shrubs, Vines for Attracting Birds*.

Trees and shrubs grow slowly. It will be years before we have a showing for our work. But we know this. The cycle of farming is always long, and we have learned to understand this fact over the years. Nevertheless, we have the confident feeling that something is started that is good and in the direction of permanent agriculture for Honey Hollow.

TREES SAFEGUARD WATER SUPPLY



Plantations protect Hanover Municipal Reservoir.

In 1930, the busy industrial wheels of Hanover, Pa. (population 18,000) stopped turning when the municipal water supply system failed.

Today, with all factories turning out war products, Hanover is assured of a steady water supply because the city not only built a new and large reservoir but took steps to protect it from excessive runoff and silting by systematically planting the watershed to trees.

More than a thousand acres of the watershed of 1,412 municipally owned acres—391 of them in Maryland—has, during the past decade, been planted to 1,026,000 trees—red and white pine, and Norway and white spruce.

Many of the trees are going on 11 years old, big sturdy fellows, and the streams feeding the reservoir run clear and full. Waterworks Manager Roy W. Straley says very little silt gets into the 202,000,000-gallon reservoir. Acquisition of a few more tracts in the watershed will complete the city's land-buying program. But Mr. Straley isn't worrying about erosion from one field still privately owned—it's farmed in contour strips.

WHERE SHALL WE GET THE SEED?

By GROVER F. BROWN

The war demands for beef, pork, eggs, poultry, milk, and other livestock products, have been met surprisingly well. To continue meeting such demands we must be assured of a plentiful supply of livestock feed—and that demands seed supplies.

So much emphasis has been put on livestock products themselves that the use of forage for seed production largely has been lost sight of. We might expect farmers to make fully as great effort to meet seed goals to meet livestock products goals if they knew the urgency of the need. Information regarding the National forage seed situation should be placed before farmers, and patriotic emphasis placed on reaching the desired seed goals.

The National over-all seed picture is not bright. A number of factors operated to affect the production of seed last year—some favorable, some unfavorable. Price support came too late to achieve maximum benefit. Fortunately, the market price has been so strong that price support was generally not needed.

Total livestock population has increased to an all time high. This calls, of course, for greater quantities of hay and pasture, which reduces to that extent the acreage harvested for seed. With hay selling from \$20 to \$30 per ton, the price for seed must be correspondingly high to meet the competition, but to grow this increased feed we must have the seed to plant. Thus, is the circle completed.

Considerable winter killing of some of our legume stands occurred last winter. This resulted in some reseeding, increased the pressure for livestock feed, and somewhat disrupted crop rotations. Part of this winter killing was a consequence of planting unadapted seed; the loss to the Nation, because of the use of unadapted seed, looms very large.

Present indications are that the heightened demand for food will continue during 1944 and for at least a year or two after the defeat of the Axis. Many of our hay and pasture plantings must be renewed before then. We hope the seed for this purpose will be available.

Lend-lease has cut into the National supplies of forage crop seeds some extent, but in general has not been sufficient materially to affect the supplies available for local consumption. During 1942 Russia and

EDITOR'S NOTE.—The author is assistant chief, division of agronomy, Soil Conservation Service, Washington, D. C. Dr. Brown makes acknowledgment to E. A. Hollowell, M. A. Hein, and H. M. Tysdale of the Bureau of Plant Industry, Soils, and Agricultural Engineering, and G. C. Edler, of the Bureau of Agricultural Economics, for information on this subject.

the United Kingdom were the two heaviest users of forage seeds, each taking over 14,000,000 pounds. In 1943 Russia is not requesting forage seed but is asking an increased supply of vegetable seed. The United Kingdom requested some 19,000,000 pounds of forage crop seeds for 1943 but was allotted only about 12,000,000. In 1942 Russia bought heavily in alfalfa, alsike, red and crimson clovers, brome, orchard, timothy, crested, and perennial ryegrass and the vetches. The United Kingdom then needed mostly alsike, red and crimson clovers, together with orchard grass and timothy. In 1943, the United Kingdom wanted more orchard, meadow fescue, Kentucky bluegrass, timothy, alsike clover, red clover, common vetch, and fodder corn than other kinds of forage seeds. It is unfortunate that our supplies are insufficient to meet our own needs plus those of our allies, because in terms of food units, a great deal more can be shipped as seed than can be shipped in the same space as processed foods.

The data on seed production and prices in the accompanying table were obtained from the Division of Agricultural Statistics, of the Bureau of Agricultural Economics, and represents the best information as of December 1942 and 1943. Prices to growers are on the basis of clean seed and, of course, are far below retail prices. The spread in prices between the two dates does indicate to some degree the relative seriousness of the seed supply situation. Similar data were desired on all grasses and legumes, but the ones included here are the ones of largest significance in terms of forage.

If one were asked to name the single measure that is most important in soil conservation and crop production, cover crops would be sure to make a lusty bid for consideration. There are millions of acres that should be planted to cover crops each year and this calls for an annual supply of seed far greater than is now available. Many farmers can and do grow their cover crop seed, and more should follow their lead.

One of the great needs of the Southeastern States is a good legume cover crop. Austrian winter peas have shown promise, but unfortunately most of the seed is produced in the Pacific Northwest, and shipped across country for seeding. The interval between harvesting in the Northwest and planting in the Southeast is so short that much of the seed must be held over for the following year. This involves

CLEAN SEED PRODUCTION, CARRY-OVER, AND PRICE TO GROWERS

Kind of seed	Amount produced, pounds		Carry-over, pounds		Prices * to growers, per 100 pounds	
	1942	1943	1942	1943	1942	1943
Sweetclover.....	20,088,000	21,420,000	11,995,000	8,862,000	\$6.82	\$9.72
Hairy vetch.....	32,020,000	21,580,000	2,840,000	11,170,000	10.00	11.90
Alfalfa.....	47,826,000	55,034,000	13,216,000	4,999,000	26.66	32.67
White clover.....	1,890,000	2,080,000	801,000	594,000	40.50	43.15
Alsike.....	12,228,000	11,825,000	5,873,000	2,723,000	19.80	27.05
Red clover.....	40,728,000	55,628,000	40,232,000	23,276,000	19.28	30.17
Lespedeza.....	135,969,000	129,671,000	19,075,000	8,718,000	5.86	9.71
Austrian winter peas.....	133,300,000	154,000,000	1,643,000	61,000,000	5.00	5.00
Ladino.....	360,000	345,000	206,000	61,000	37.00	125.00
Crimson clover.....	17,060,000	14,140,000	2,554,000	6,302,000	10.70	10.70
Sudan.....	37,300,000	30,900,000	25,652,000	8,510,000	2.60	7.15
Timothy.....	69,408,000	62,127,000	15,433,000	32,720,000	4.56	5.44
Redtop.....	16,600,000	10,300,000	13,837,000	13,476,000	6.40	14.30
Ryegrass.....	33,300,000	25,800,000	8,769,000	9,467,000	5.00	7.90
Oreohard grass.....	6,090,000	5,725,000	434,000	270,000	20.05	24.80
Bromegrass.....	8,902,000	6,885,000	2,159,000	4,147,000	12.35	12.35
Ky. bluegrass.....	33,152,000	10,800,000	10,235,000	19,496,000	5.60	10.35
Meadow fescue.....	1,225,000	1,175,000	185,000	182,000	7.00	12.70
Crested wheatgrass.....	12,008,000	3,883,000	987,000	862,000	-----	9.70
Bermuda.....	865,000	1,000,000	-----	16,000	-----	-----

* Best available average prices and therefore subject to variation for any particular locality.

† Wisconsin.

‡ Oregon.

§ Cured price.

not only an additional expense to the Southeastern consumer but necessitates large storage facilities. Consequently, there is a great need for cover crop seeds to be produced in the Southeast for use in the same area.

Seed of crimson clover, bur clover, blue lupine, vetches, crotalaria, and wild peas can all be produced in the Southeast and the acreage should be increased rapidly.

Sweetclover is a very valuable pasture legume in certain sections of the country. It has an exceptionally high carrying capacity, is relatively easy to establish, and the seed has been quite reasonable in price. Our seed production during 1943 was considerably below that of 1942, with a corresponding smaller carry-over to bolster the low 1943 production. The 1943 production was only about 40 percent of the average annual production in the five-year period 1937-41. This can mean much less pasture during the two critical years immediately ahead.

As to alfalfa the seed situation is affected by a number of factors. We are very short of seed adapted to the northern region; we have enough for the central region; there is a surplus in the southern region. In view of this set-up there is a tendency for seed from the Central and Southern States to move north where it is unadapted. Many failures of both new and old alfalfa stands in the Central and Northern States during the winter of 1942-43 can be laid directly to the use of unadapted seed, seed not sufficiently winter-hardy to survive the cold.

So much southern-grown seed has moved north that a seed shortage was claimed in this area. To satisfy this condition, some 2,700,000 pounds of Argentine seed were imported for use south of 38° latitude. Such a situation can be the result of poor

planning on the part of seed dealers, or it can be created purposely to take advantage of a price differential on imported seed. For example, the price of Argentine seed laid down in this country was approximately 16 cents per pound to the wholesaler and could be sold at 31.9 cents wholesale or 42.9 cents retail, the same as allowed for southern-produced seed—a possible margin of about 28 cents per pound. Restriction of imports of Argentine seed until there is a real shortage in the areas where such seed is adapted, is being seriously considered.

In view of the shortage of seed adapted to the northern areas, particularly of some of the newer wilt-resistant varieties such as Ranger, consideration is being given to growing such varieties in the central and southern sections to produce seed adapted in the north. It is unlikely that the genetic quality of northern-produced seed would deteriorate for at least the life of the original planting of northern seed in the south. Thus, northern-bred seed could be increased farther south for use in the north, and the southern seed producer would not only benefit from growing seed commanding a higher price, but the northern seed user would be assured a more plentiful supply of well adapted, disease-resistant seed. From tests conducted by the Bureau of Plant Industry, Soils, and Agricultural Engineering and State Experiment Stations, northern adapted varieties such as Ranger, will produce just about as much seed and with but a slight reduction in yield of hay when grown under southern conditions as compared to the local southern varieties. At present prices, certified northern-adapted seed is about 14 cents per pound higher in price than southern-adapted seed; therefore, it is much more profitable to the southern seed grower to produce northern-adapted seed.

Ladino clover is one of our most valuable pasture legumes and is annually producing many millions of pounds of beef and milk. It is one of the highest forage-producing legumes where it is adapted and the limited amount of available seed is the only reason many more thousand acres aren't seeded. New York state alone wants more ladino seed for seeding new hay and pasture fields than was produced in the entire country during either 1942 or 1943. The production of seed during these two years was below the average annual production for the five-year period between 1937 and 1941. In fact, we failed by 75 percent in 1943 to reach our seed production goals for ladino. This was due to a number of factors but the high value of hay and pasture in the seed-producing areas and the drive for more milk in these areas were major contributing factors to the failure to reach the desired goals. The appeal for more milk and meat went out to the seed-producing farmers the same as to all others with the result that such farmers increased their own dairy and beef herds and decreased to that extent their seed production. If they had increased their ladino seed output, such seed planted all over the country would have resulted in a much greater increase in meat and milk than was obtained on these individual seed farms.

It is becoming increasingly difficult to maintain pure stands of ladino for seed. Common white clover is contaminating some of the ladino fields in California to the extent that certification is out of the question. This is quite a serious matter when it pertains to a legume as valuable in the hay and pasture world as ladino. It may, therefore, take more than a favorable price or a patriotic appeal to seed growers to get the desired production.

Sudan grass is one of the most important summer pasture and hay plants in this country. Every summer it produces many millions of pounds of milk and meat products. Because it is a summer annual, used as a supplementary pasture and hay crop, it is very important that a plentiful supply of seed be available each year. It is particularly important during drought periods, and because droughts cannot be predicted 6 months or a year in advance we must be prepared for any eventuality. The present Sudan seed situation is unfavorable for next summer plantings, especially if conditions are such as to demand considerable quantities of Sudan. We failed by over 40 percent to reach our 1943 goals in the production of Sudan seed. Our production of Sudan seed in 1943 was about 7,000,000 pounds less than in 1942 and, in addition, we had almost 13,000,000 pounds less carry-over than we had in 1942. This puts us into next summer's planting with something

less than 20,000,000 pounds below the supplies we had on hand at the beginning of this year's planting season. In addition to this, the production of seed during both 1942 and 1943 was far below the average annual production for the five years from 1937 to 1941; the production in 1943 being less than half the 5-year average. The price increased to the grower between November 1942 and November 1943, from \$2.60 to \$7.15 per 100 pounds clean seed, a serious factor in itself. In view of this, we need to be exceptionally careful regarding the way we conserve and use the amount we do have. Every reasonable effort should be made to bring our seed production this coming summer up to somewhere near the average annual figures so the supply for 1945 will be more favorable.

Bromegrass is rapidly filling a much needed spot in our hay-pasture program. It is proving to be the best grass to include in mixtures with alfalfa over most of the northern half of the country. It is encroaching into the area where timothy was once king of the hays. In recent years, it has become apparent that the place of origin of brome seed is just about as important in evaluating the seed as in the case of alfalfa seed. Seed produced north of the 42° longitude is to be preferred for planting in the North over seed produced south of that line. On the other hand, seed grown south of that line in Nebraska and other States produces higher yields when planted under the warmer conditions than will seed from the north. Our total production in 1943 was about three-fourths of that produced in 1942, and was only about 49 percent of the brome seed goal set for 1943. If we are to keep up our brome production, the acreage harvested in 1944 will have to be higher than in 1943.

In the Northern Great Plains area crested wheatgrass is producing beef par excellence. Data obtained from experiment stations, such as the one at Moccasin, Mont., show that crested not only has a high carrying capacity but that the hay quality is practically as high as alfalfa and the plant's ability to grow under conditions of limited rainfall is creating a real place for it on the ranges and farms of that section where meat production is so important. Our seed production in 1943 was only about 38 percent of that in 1942, yet the demand for seed has increased. Some part of the smaller production this past summer was due to the cold, dry period in early spring that adversely affected normal seed production.

The Departmental Seed Production Programs Committee is making excellent strides toward clearing away much of the past confusion concerning the

(Continued on page 190)



Seed of *Lespedeza hedsaroides* grown in Soil Conservation Service nurseries in the Southeast are supplied to farmers in soil conservation districts who are interested in growing more hay. This seed block in the nursery at Chapel Hill, N. C., shows the dense cover provided by this relatively new perennial legume.

(Continued from page 178)

new plants, make observational plantings of them, and increase the seed or vegetative parts of the best kinds.

Before seed increase of a crop is undertaken, that crop must show real promise for soil conservation. It may show this promise in an introduction planting at state agricultural experiment station, on a farm, or in initial observational plantings at Soil Conservation Service nurseries. If the crop is good enough for approval of agronomists or biologists of the Soil Conservation Service and the State Agricultural Experiment Station, its seed are rapidly increased at the nurseries and used in soil conservation work.

One example of a new plant, which has been increased and distributed is *Lespedeza hedsaroides*, previously misidentified as *Lespedeza juncea*. The original seed were substituted by Japanese seedmen for an order of *Lespedeza bicolor*. Despite such a mistaken identity, the crop showed promise in the nurseries and was approved for seed increase by agronomists. The seed producing acreage in the nurseries was expanded as rapidly as possible and a wide distribution of seed made for use on farms cooperating with districts. In 1943, 5,490 pounds of seed were produced and distributed for soil conservation use on farms cooperating with districts. Since 1936,

a total of 42,500 pounds of seed has been produced and distributed. Seed of *Lespedeza hedsaroides* is now appearing in the commercial trade channels. When it becomes well established there, the production on Soil Conservation Service nurseries naturally will be curtailed.

Seed and seedlings of the large bush lespedezas, *L. bicolor*, *L. cyrtobotrys*, and *L. thunbergii* have been produced at the request of biologists. The Bureau of Plant Industry, Soils, and Agricultural Engineering supplied the first seed of these species for increase. There has been a steady increase in acreage for seed production, using the steepest and roughest lands on the nurseries for this purpose. A total of 600,000 seedlings and 6,165 pounds of seed of these lespedezas was produced and distributed from Soil Conservation Service nurseries in the Southeast during the fiscal year 1942-43.

The third example is the increase of seed of Bahia grass, a valuable pasture plant. Strains of Bahia grass, *Paspalum notatum*, were obtained from Texas from the Bureau of Plant Industry, Soils, and Agricultural Engineering and from local collections made in Florida and North Carolina. The behavior of these strains was studied in the initial observational plants at Thorsby, Ala. and Chapel Hill, N. C., nurseries. Strains collected at Pensacola, Fla., and Wilmington, N. C., have produced the largest growth and endured winter cold with least injury. With the approval of agronomists of the Soil Conservation Service and State Agricultural Experiment Stations, the increase of seed of these better strains has begun.

Seed increases are also being made of medium hop clover, *Trifolium procumbens*, subterranean clover, *Trifolium subterraneum*, wild winter peas, *Lathyrus hirsutus*, large flowered vetch, *Vicia grandiflora*, local strains of meadow fescue, *Festuca elatior*, red fescue, *Festuca rubra*, red top, *Agrostis alba*, and superior selections of both Korean lespediza, *Lespedeza stipulacea*, and sericea lespediza, *Lespedeza sericea*. Rootstocks of two heavy yielding strains of Bermuda grass also are being increased.

Under the leadership of D. G. Craig, regional training officer at Albuquerque, N. Mex., a class of staff members has been organized in public speaking. This is the second such undertaking in the Soil Conservation Service, the first has been in being for some time in the Milwaukee office under the guidance of E. J. Peterson, regional training officer.

The fundamental principles of giving prepared subject matter, radio talks, after-dinner speeches, impromptu responses are studied. Every participant has a chance on the floor and also acts as a constructive critic.

SWEETCLOVER'S UNIQUE ROLE IN SOUTHWEST



Two stages of revegetation, as revealed on farm of R. E. Pierce, Upper Washita Soil Conservation District. At left, native grasses already well established; blue grama predominates, with a scattering of sideoats grama and little bluestem. At right, second-year growth of sweetclover on land to be planted to native grasses in spring of 1944, as Pierce retires eroding cultivated land to vegetation while keeping the land in war production. The clover is making a heavy seed crop; it is also used for hay and grazing.

By KENNETH YOAKUM

Sweetclover is helping western Oklahoma farmers to return eroding cultivated fields to native grasses while keeping the land in war production.

Early revegetation efforts proved the need for a ground cover to protect seedling grasses, and at first sudan or sorghum was used. Results were excellent, but the land reseeded was out of production for at least 2 years. Howard and John Flick, father and son, cooperators of the Upper Washita Soil Conser-

EDITOR'S NOTE.—The author is work unit leader, Soil Conservation Service, Hammon, Okla.



Howard Flick, whose farm is northwest of Hammon, Okla., examines grass-sweetclover pasture third year after seeding to native grasses. Sweetclover has persisted, increasing the amount of grazing and improving the soil.



Beef being produced on farm of M. B. Hart, near Geary, Okla., on pasture of 1- and 2-year-old sweetclover, Bermuda grass and native grasses that were seeded May 12, 1941.

vation District, encountered this problem, and overcame it with assistance from Soil Conservation Service technicians. Here's the experience of the Flicks:

"We got a good stand of native grass in our demonstration plot and are well pleased with this native grass seeding. We planted Sudan in 1939 to provide a cover in which to seed our native grass in the spring of 1940. But we lost the use of the land for 2 years under this method.

"With agricultural products so badly needed for war consumption, we must find some way to obtain production from these eroded acres and at the same time prepare to get these acres into grass."

"We have learned that the most practical way is to seed the land in sweetclover 2 to 4 years before planting native grass seed. This permits livestock to graze these areas, and also provides a cash crop through the sale of seed."

This procedure is widely used, and up to this time 784 Upper Washita Soil Conservation District farmers and ranchers have seeded 3,695 acres to native or adapted foreign grasses. The method is supported by experimental results at the Red Plains Conservation Experiment Station at Guthrie, Okla.

Sweetclover adds vitally needed organic matter to the soil, and stores nitrogen for the use of the grasses that are to follow. Howard Flick finds that after 2 years of sweetclover the soil is "soft and spongy and has a good leaf mold among the old sweetclover stubble." In the most severely eroded spots, where a good cover of sudan could not be obtained, sweetclover has done well. After the sweetclover has prepared the ground, the native grasses can be seeded. The sweetclover continues to appear with the grass for a number of years and makes a mixed clover-grass grazing liked by the farmers of the district. The Flicks used a mixture of 10 pounds of blue grama, 1½ pounds side-oats grama, 2 ounces of African weeping lovegrass and of sand dropseed per acre in the sweetclover. These grasses were ready for grazing the second year after planting, although a seed crop of sweetclover had been harvested each of the 2 years. The Flicks said that grass growing with sweetclover is "a dark green and where there is no sweetclover the grass is a pale yellow color."

Volunteer sweetclover, farmers have said, does give the seedling grasses some competition, but it is their opinion that the clover does more good than harm. As the grasses spread and become thoroughly established, the clover is expected to disappear—but until it does its contribution is increased forage production and increased soil fertility.

Both white and yellow sweetclovers are planted. Yellow sweetclover can be combined easily for seed, and the white sweetclover usually is so rank that it is cut with a binder and threshed with a combine after curing.

On the Flick farm, seed and honey are byproducts of the revegetation program. Three thousand pounds of white sweetclover seed were harvested from 10 acres that will be seeded to native grass next spring.



Honey is a byproduct of the use of sweetclover as a step in returning eroded western Oklahoma land to native grasses. John Flick (left) and his father have 15 stands of bees that produce about 30 pounds of sweetclover honey per week during the blooming season.

"I don't know of anything else that would have made us as much pasture, would have controlled erosion, given us a cash income, and helped us get this land ready for seeding of native grass," Howard Flick explains. "We have 15 stands of bees and during the growing season we got about 30 pounds of honey each week. You can tell where that honey is coming from as it is clear in color and has a vanillalike smell to it."

Jim Hall, a former supervisor of the Upper Washita Soil Conservation District, in 1942 combined 3,000 pounds of sweetclover seed from a 30-acre planting of native grass in 1942, and 6,500 pounds of sweetclover seed from eroded land he will retire to native grass.

Forest Boal, who has completed a soil and water conservation farming program with district help, has been using a combination of rye and sweetclover for temporary pasture during the last 5 years and reports that the combination has given more pasture than anything else he could have. The 20-acre field growing rye and sweetclover is terraced.

"I just let the rye and sweetclover fight it out," Boal said. "Sometimes I think the clover is about to pass out of the picture, but it always manages to come back and furnish lots of grazing. I take my sheep off the rye in time for it to make sufficient seed and then one-way the land lightly each fall. I have clover making seed every year under this method of temporary pasture, as well as first year clover coming every spring."

Sweetclover also is used in combination with other small grains. R. E. Pierce, another district cooper-

ator, planted 15 acres of sweetclover with oats last spring. The clover was broadcast in front of the grain drill.

On 12 acres of second year sweetclover which is to be followed by native grasses he carried 12 cows during March, April, and May, permitting the deferment of grazing on native grass pastures at a time when the grasses needed protection from grazing.

In order to speed the reseeding of native grasses on shallow soils, steep land, and eroded soils, many farmers in the Upper Washita Soil Conservation District have been combining native grass seed that will be planted following 2 years of sweetclover. In

1942 more than 3,300 pounds of native grass seed mixture, consisting principally of blue grama with some side-oats grama and little bluestem, were harvested. John and Howard Flick harvested 354 pounds of grama grasses from seeded pastures in 1942 and planted it in 1943 on 37 acres of land where sweetclover had been grown 2 years.

Planting sweetclover in native grass pastures, in Johnson grass pastures and meadows, and in weeping lovegrass is proving to be a desirable practice in a number of soil conservation districts in the Western Gulf Region of the Soil Conservation Service.

THE DIARY OF AN AWAKENING FARM

Shortly to be released by the Department of Agriculture is a two-reel, color-sound film, "For Years to Come." It is a vivid, realistic, unique production chronicling the changes wrought by soil conservation on one typical farm within a single 12-months' span.

The farm belongs to Christian B. Musser, York County, Pa.—but the transformation parallels what has happened, is happening every day, on countless other farms in Georgia, Mississippi, Utah, Oregon, Nebraska, Iowa.

Musser was considered a good farmer. Today, he is an even better farmer. The new film is a faithful record of the fateful first year in which he swung from the old system to the new. It shows his straight rows giving way to curves, his square fields changing to strips gently following the contour of the land. In this brief time, mossy tradition is swept away and the Musser farm puts a new plan into effect—a plan which safeguards the soil and brings about increases in production.

Photography started on the Christian B. Musser farm in September 1942. It followed right along through the year, the last "shots" being made the first of November 1943.

The cameraman, Rodney B. Radford, made some 20 trips to the farm. Harvest operations up and down the hill were photographed in 1942, the usual jobs around the farm during the fall and in the snow-bound winter.

The spring sequence opens with atmospheric scenes—blossoms, dogs, a few pigs, and ducklings. This is followed by potato cutting and then the laying out of the contoured potato and soybean fields. Planting follows, as do all operations in regular order, and the unusually dry season terminates with Musser very much pleased with what he has accomplished. He had obtained more corn from 28 contoured acres than from 33 straight-row acres the year before. Due to drought, all crops on the Musser farm and throughout the locality were below normal, but because of the water stored

by contouring, Musser's yields were far above the community average.

The film shows pointedly that the change-over is not difficult, and that the usual farm jobs go on without interruption as soil conservation is invoked.

The film lasts 22 minutes, has good music. The first print is scheduled for review in Washington sometime in March, soon after which it is expected that prints will be available for distribution.

CARROTS ON THE CONTOUR

Through the efforts of Miss Marjorie Gilbert, home demonstration agent in DeKalb County, Tenn., and the DeKalb County Soil Conservation District, more than 30 farm gardens, comprising 25 acres, were planted on the contour in the county.

Miss Gilbert became interested in the possibilities of contour planting of gardens when she attended a meeting of the district supervisors in January. Representatives of various agencies were invited to the meeting for a study of widespread conservation practices to aid in the war food production program.

Contour cultivation was emphasized and it was pointed out by Charles L. Lenning, Jr., work unit conservationist, that this practice would help to conserve soil and plant food, as well as moisture needed in the production of crops.

Recognizing the importance of adequate moisture for garden crops, Miss Gilbert attended a demonstration by the conservationist on laying out contour lines with the aid of a carpenter's level and later held a number of demonstrations herself for women throughout the county.

Although the work didn't get under way until late in the season this year, the 30 contour gardens are considered a good beginning, and plans have been made to get an early start on the campaign for contour planted gardens this year.



SOIL CONSERVATION

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REVIEWS

ROOTS IN THE EARTH. By P. Alston Waring and Walter Magnes Teller. New York. November 1943.

When I wake up at 2 a. m. and start to read a book in the hope that reading will make me sleepy; when at 3:30 a. m. I am so absorbed in that book that I am reluctant to go back to bed; and when even at that hour, I can only get back to sleep by drinking a glass of hot milk-and-something—why, then you might say that book is somewhat more than casually interesting.

This is not to say that **Roots in the Earth** is merely interesting—it is one of the most searching books about America that I have read for quite a while. Nevertheless, it is particularly important that a book of this type be interesting reading, simply because the more interesting it is, the more people may be expected to read it, and that is vital. Unread books don't wield much influence.

Roots in the Earth isn't what you might judge from the title. It isn't a treatise on plants, nor is it a book on "how to be a farmer" in the usual sense of telling what and how to plant, what to do at lambing time, and so on. It is distinctly not a back-to-the-land book. Anything but—and you'll see what I mean when you read it.

Instead of doing anything so obvious, Mr. Waring and Mr. Teller discuss the fundamental problems—social, economic, agronomic, and political—which beset the great majority of American farmers, the men and women who operate the country's "family-size" farms—the men and women who have roots in the earth because they love their land.

They discuss these problems, and their causes and effects, with frank particularity, and tell what they think is necessary to solve the problems. Because these authors are farmers, and therefore know from hard experience what they are writing about, what they say has the solid sound of fact rather than the hollow note of theory.

That is why the book kept me wide awake in the middle of the night—it has a ring of sincerity and urgency. Often it leaves one with a warm glow of indignation—either with or against the authors, depending on one's individual point of view on the matters under discussion.

On the subject of soil conservation, **Roots in the Earth** is sound, as might be expected from writers who are also practical conservationists themselves. The subject is discussed innumerable times in several different chapters and in connection with many of the farmer's problems. Chapter VII, "Six Farmers on an Upland Stream," is practically a word-for-word reprint of a bulletin Mr. Waring wrote for the Soil Conservation Service, "Teamwork to Save Soil

and Increase Production." Many conservation-minded readers will cheer the authors' specific recommendation that "Total conservation should be undertaken and the Soil Conservation Service expanded to meet the requirements of this vital work."

Mr. Waring and Mr. Teller profess to have "no blueprint for the agriculture of the future," but they leave the reader with a pretty clear idea of what will have to be done. At times they paint a dark picture, but they point out the way to the ultimate achievement of the goal, a sound, productive, and permanent agriculture that will give the great army of American live-on-the-farm farmers a chance at a decent life.

And they cite with conviction increasing evidences that this body of rural citizens, with the help of education and cooperation, is moving slowly but steadily toward that day.

This book is not for farmers alone, although its primary message is to them. It is a book for all Americans who want America to move forward instead of backward, and become a better place for people to live in.

—William Clayton Pryor

(Continued from page 185)

seed situation. Much of the credit for such progress should go to the committee's able chairman, C. R. Enlow. Already developed is a proposal for the war emergency production of improved grass and legume seeds, a proposal which was presented to the International Crop Improvement Association in Chicago on November 30. The fact that this association reported favorably on the committee's proposal for increase of foundation stocks of improved grass and legume seed speaks well not only for the active progress being made but also for the fine relationship that is being built with the agencies sponsoring the production of high quality seed.

The committee has also made recommendations on price support for State certified seed of varieties and strains of alfalfa, red clover, sweetclover, and timothy. It has, too, made detailed recommendations regarding the export, import, and allocation of present seed stocks. This collaborative work of all the technical agencies dealing with the production of forage crop seeds should continue to be of great importance to the National seed production and distribution scheme, not only during the present war period, but also, and increasingly, during the vital post-war period.

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Compiled by ETTA G. ROGERS, Publications Unit

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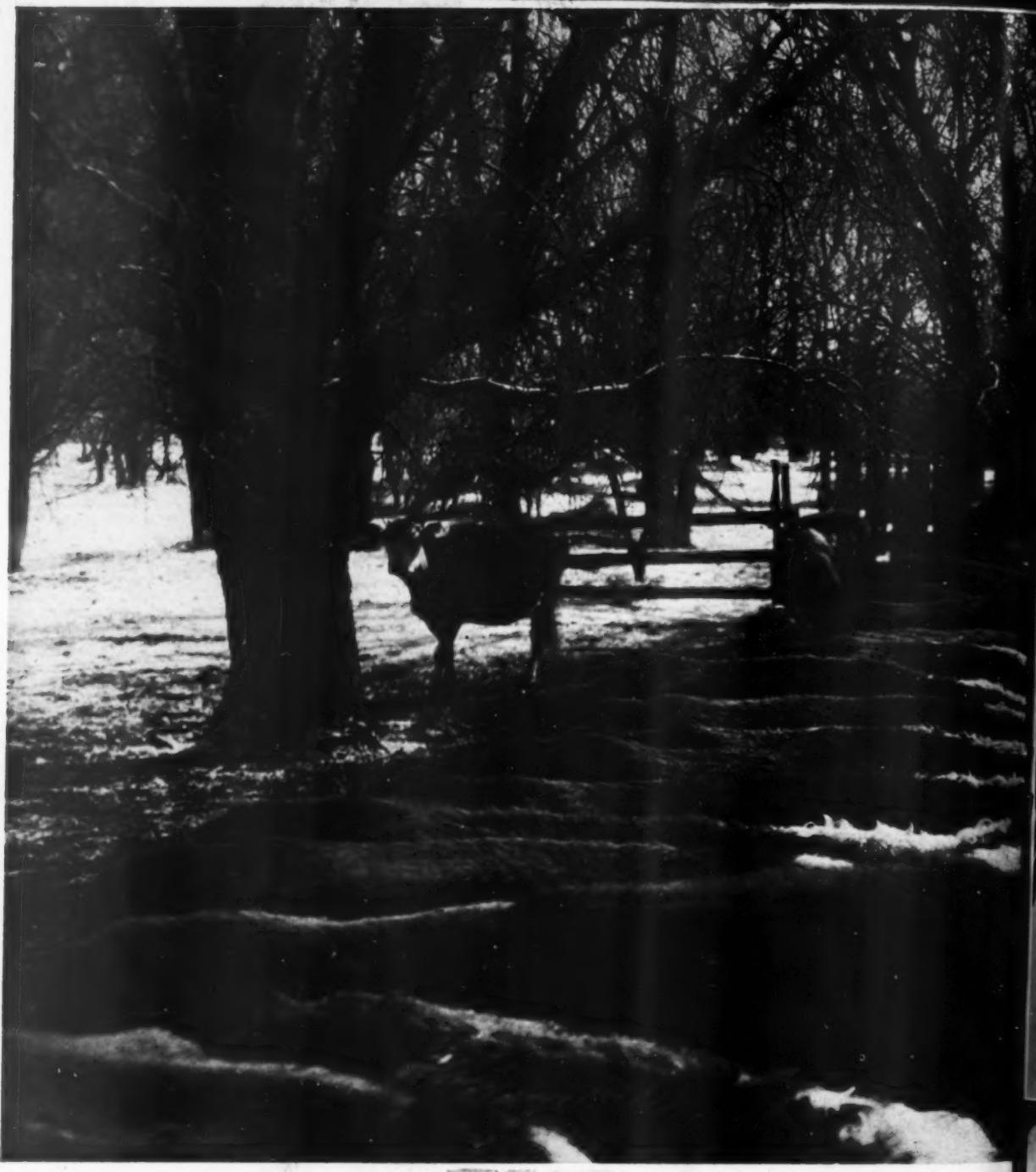
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¹ Prepared by the Soil Conservation Service solely for official use within the Department of Agriculture—not available for general distribution.

² From Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.



Bully beef for fighting men! A familiar scene these crisp winter days on the great stock farms of the West and Middle West. Here, in the protection of an eye-pleasing windbreak, hungry Herefords are getting their ensilage rations on the ranch of D. A. Pyle, Liberal, Kans. (Photographer unknown.)

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